



UNITED STATES ARMY TEST AND EVALUATION COMMAND

FCS LUT 3 LVC MS&I Requirements Study

Overview

13 Jan 09



Ken Raab
Study Lead
ATEC-TTS
703-681-0630
Ken.Raab@conus.army.mil

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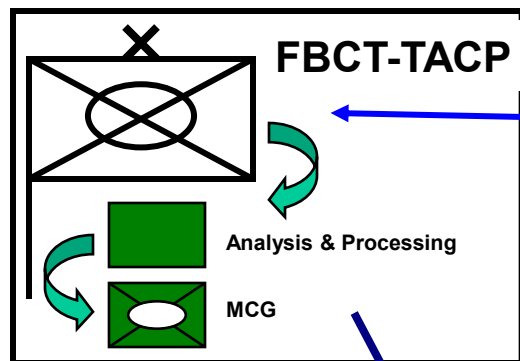
Agenda



- Future Combat Systems (FCS) Limited User Test (LUT) 3 – Phase I and II
- Study Overview
 - ◆ Purpose
 - ◆ Status
 - ◆ Methodology
 - ◆ Gap Analysis Process
 - ◆ Schedule
- Federate Candidates Process
- Questions



FCS IV3 LUT Phase 1



T1: Provide C2 for combat units
P2: Assign tactical missions/facilitate SA

T2: ID TGTs
P2: Initiate tactical response

C2V



CL I UAS



T1: ID TGTs
P1: Provide SA

T2: Observe engagements
P2: Evaluate effects

Threat

MCS



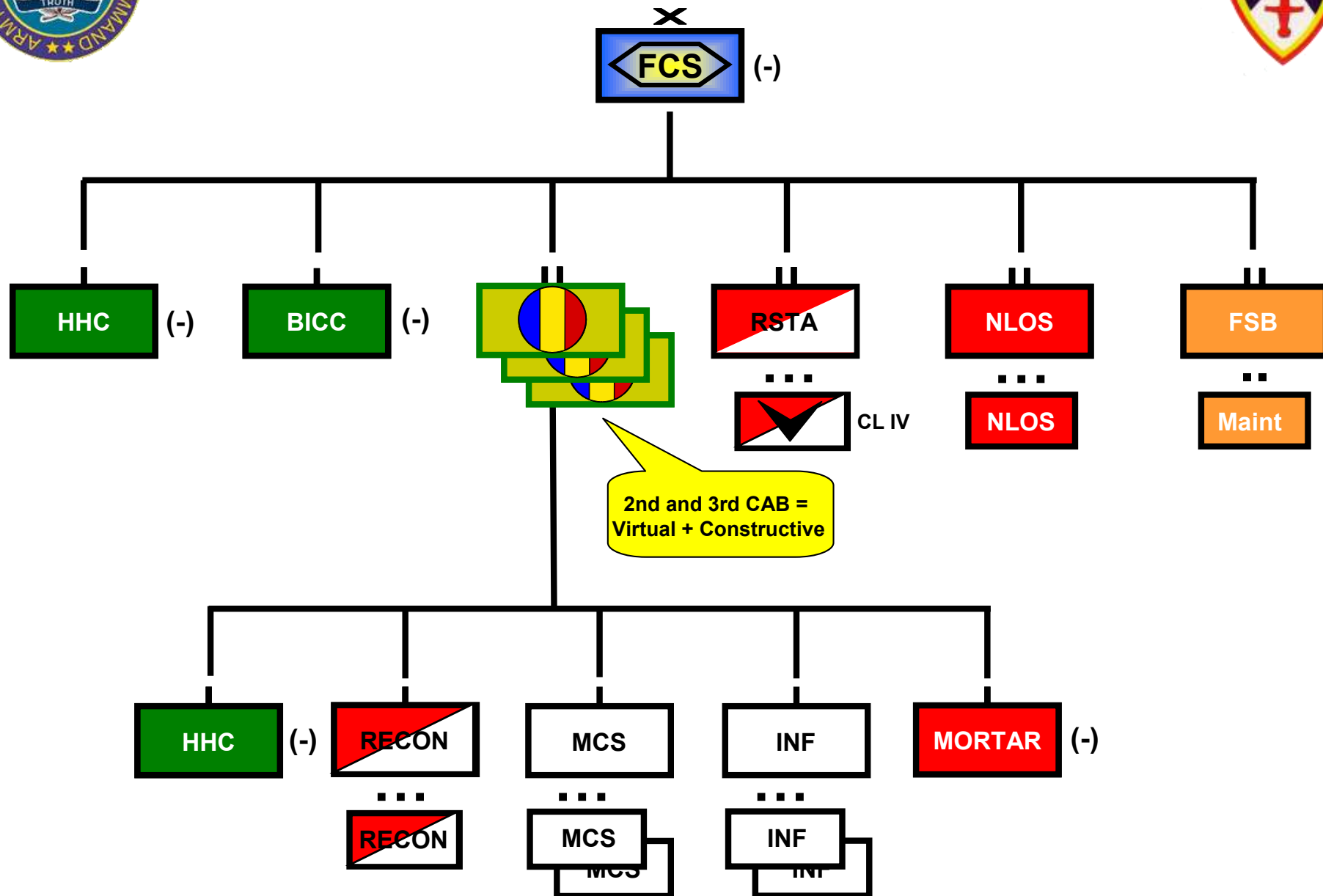
T1: Destroy Threat TGTs

P1: Prevent enemy disruption

BLOS Engagement



FCS Core LUT 3





FCS IV3 LUT Phase 2



- A Live Combined Arms Battalion (CAB), some of whose assets – in the context of the overall full spectrum operations scenario – have been cross-attached to a sister CAB in order to weight the FCS BCT's (Brigade Combat Team) main effort
- Live elements of the Brigade Headquarters; Reconnaissance, Surveillance, and Target Acquisition (RSTA) Squadron; Non-Line of Sight-Cannon (NLOS-C) Battalion; and Forward Support Battalion (FSB);
- Virtual FCS Command and Control Vehicles (C2V) which the sister CAB Commanders and their staffs, as well as select parts of the Brigade staff, RSTA Squadron, NLOS-C Battalion, and FSB will fight and control their subordinate elements from using the FCS Battle Command System and/or other C2/ISR (Command and Control/Intelligence Surveillance and Reconnaissance) systems
- Select Constructive federates (e.g., One Semi-Automated Forces (OneSAF), the LSI's Communications Effects Server (CES), etc.) which in some cases will be "manned" by FCS BCT Company/Team Leaders



Study Purpose and Deliverables



- The *purpose* of the Study Team is to:
 - “*Define* the FCS Core Program LUT 3 Live, Virtual, and Constructive (LVC) Modeling and Simulation (M&S) and Instrumentation (MS&I) (to include real-time casualty assessment (RTCA), data collection, reduction and visualization) requirements and the aligned MS&I capabilities to those requirements.”
 - ◆ Types of requirements considering as part of the study:
 - M&S (by Warfighting Function)
 - DCA&I
 - Threat
 - Training (supporting the LUT/Soldier)
 - Federation (interoperability)
- Recommend an architecture to support the LVC MS&I Federation
- *Endstate* of the study is defined by:
 - ◆ A documented (in DOORS) *set of Operational Test and Evaluation requirements.*
 - ◆ A *proposed* LVC MS&I Federation



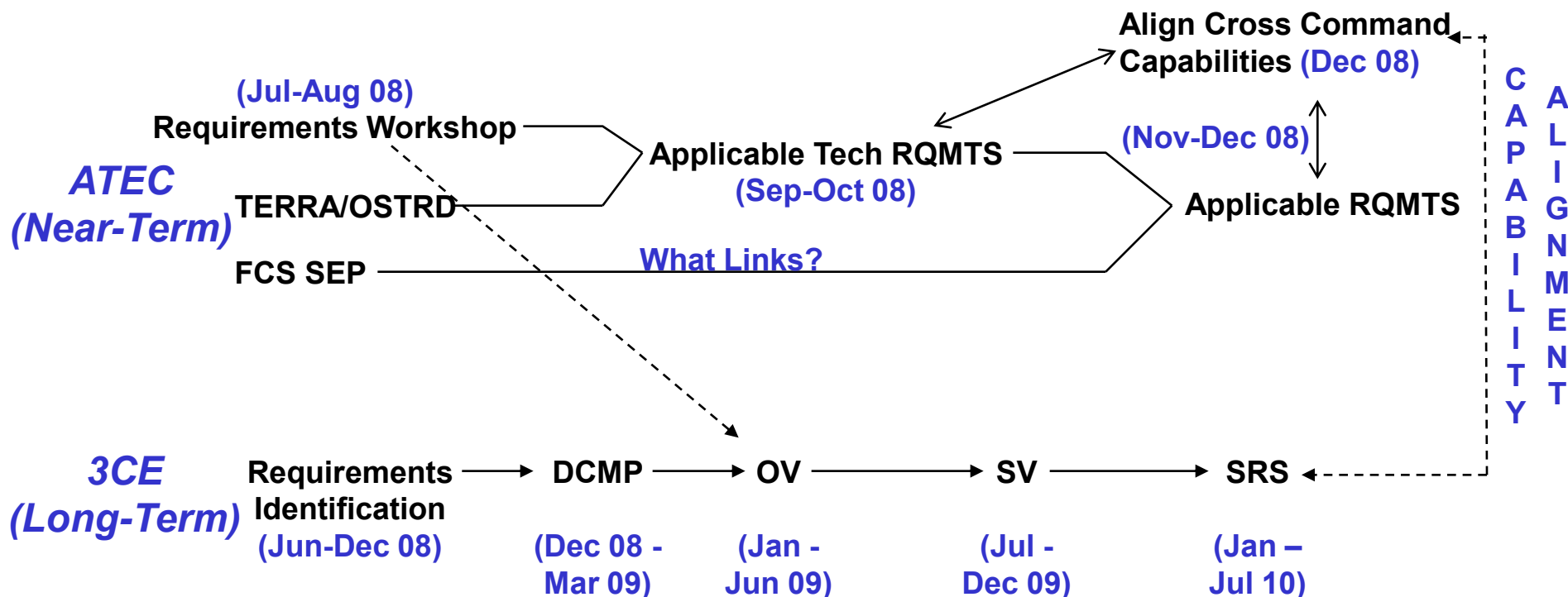
Current Status



- ✓ Kickoff Meeting – 30 May
- ✓ Initial requirements from the Evaluator and Operational Tester
- ✓ Use Case Development Workshop – 17-18 June @Leavenworth
- ✓ M&S Requirements Workshop – 14-18 Jul @Leavenworth
- ✓ Develop a list of current inventory of tools to include “as-funded capabilities” – 15 Sep.
- ✓ DCA&I Requirements Workshop – 19-21 Aug @Bliss
- ✓ Requirements Refinement and SV-4 Mapping Workshop – 2-5 Sep @Leavenworth
- ✓ Develop complete set of initial requirements: M&S and DCA&I – 15 Sep
- ✓ Leverage existing Integration events to conduct bench testing of potential tools, i.e., (Omni Fusion 2008) – Sep/Oct
- ✓ Requirements finalization workshop – 14-17 Oct @Orlando
- ✓ MS&I Tools finalization/identification workshop – 20-24 Oct @Orlando
- ✓ Finalize requirements set and publish Technical Requirements Document (TRD) from DOORS – 31 Oct
- ✓ Workshop to evaluate tools (SMEs) against list of requirements (Gap Analysis) – 3-7 Nov @Leavenworth
- ✓ Analysis of bench testing results and Gap analysis results – Nov / Dec
- ✓ Federation Operational Consideration Workshop – 8-12 Dec @Orlando
- ✓ Federation Architecture Design Workshop – 15-19 Dec @Orlando
- Draft Report – 31 Jan, 2009
- Final Report – Feb 28, 2009



Methodology – Mutually Supporting Lines of Operation



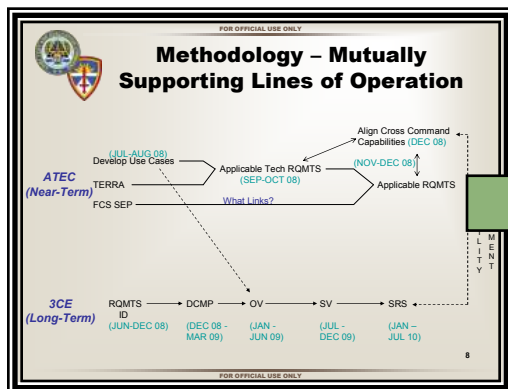
The near-term effort must *establish a foundation and inform the long-term effort* ... the long-term effort must *validate the near-term estimate and further refine resourcing* decisions



Methodology: Near - Term



Phase I: Jul – Oct 08



Conduct Background Research



Aligned metrics and technical requirements ... based on an operational use case context.

Define and Decompose Use Cases

Phase II: Sep – Feb 09



Conduct Gap Analysis

Aligned metrics and technical requirements

Identified cross command capability

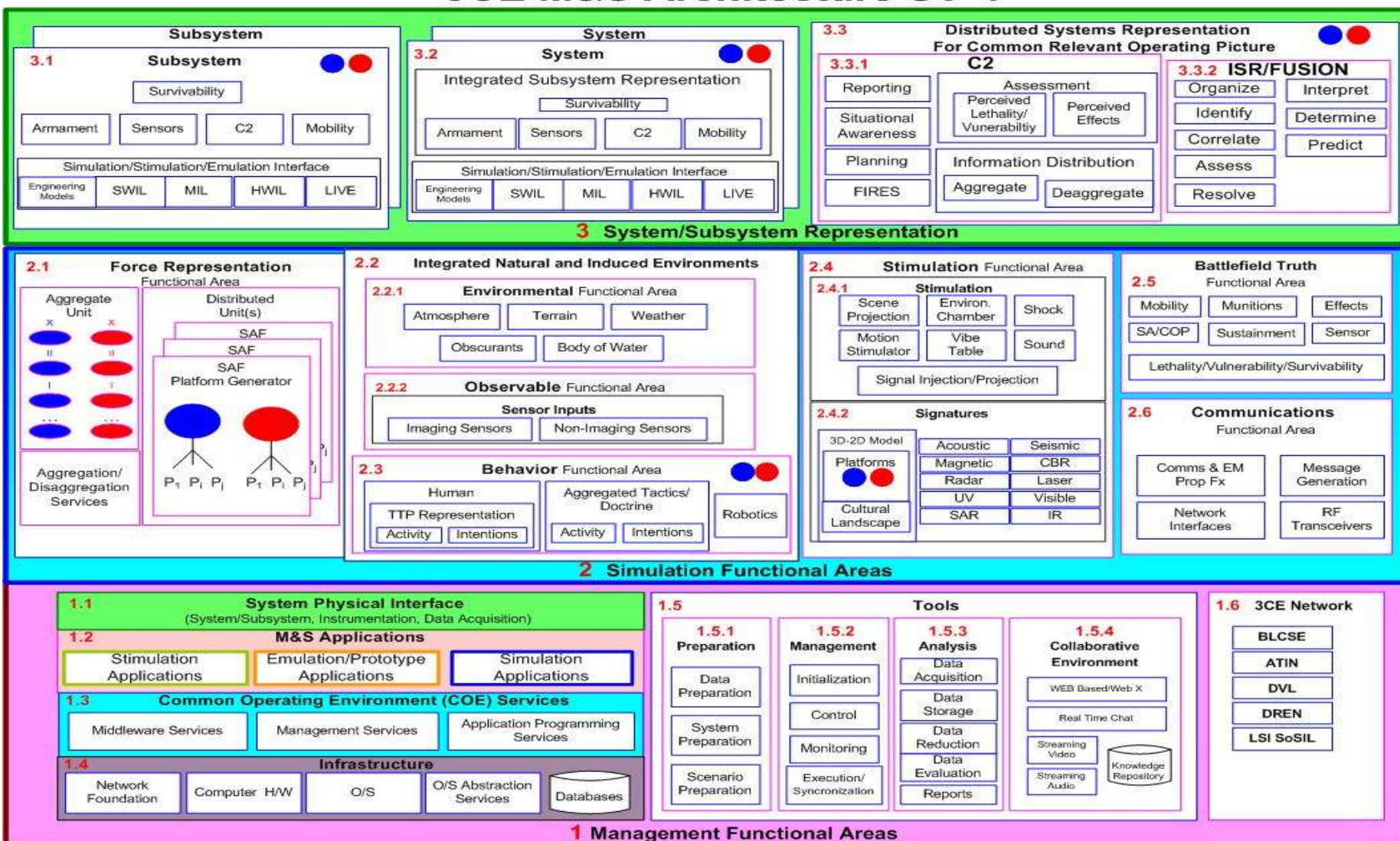
- An initial set of LVC M&S requirements
- An initial set of LVC DCA&I requirements
- An aligned set of capabilities
- Identified gaps
- Recommend solutions



A Technical Framework Approach



3CE M&S Architecture SV-4





Example: Gap Analysis by SV-4 Category



Example: List of MS&I Requirements by SV-4 Category

1, 2, 3, 4	5, 6, 7	7, 8
8	5, 9, 10	11, 12, 13
13, 14, 16	14, 15	14, 15, 16, 17

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Example: List of MS&I Tools by SV-4 Category

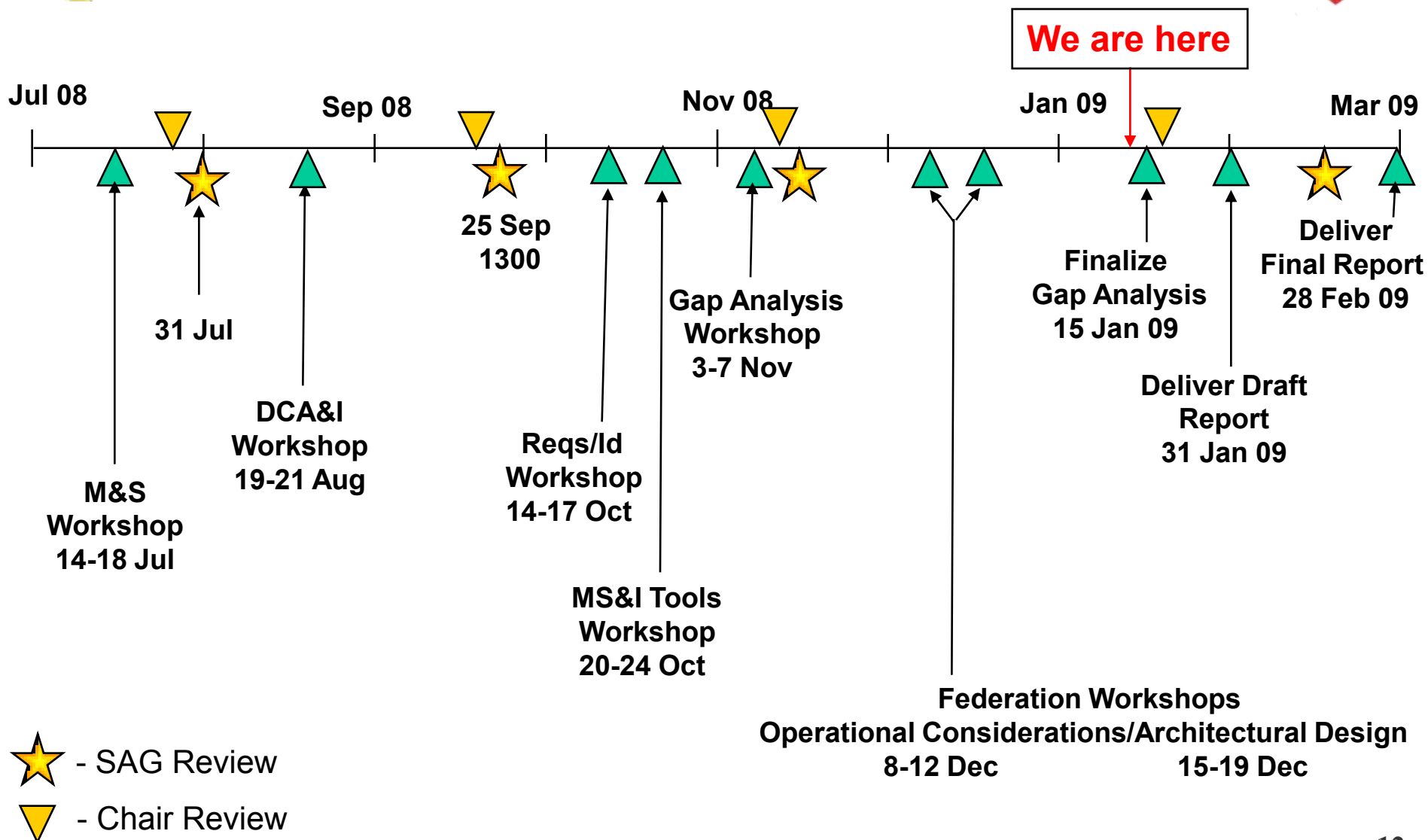
A, B, C	B, C, D	A, B, D
A, C, D	C	B, D
A, D	B, C	A, B, C, D

5

- Do the capabilities of tools A, B, and C satisfy requirements 1, 2, 3, or 4?
 - ◆ To what level of compliance?
 - ◆ To what level of fidelity?
- By requirement, do we attain full compliance?
 - ◆ If so, what tool(s) satisfy(ies) the requirement?
 - ◆ If not:
 - ❑ What level of compliance is achieved?
 - ❑ Which tool(s) achieve the “best” compliance?



Schedule





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Federate Candidates Process





Campaign Plan

Warfighting Functions (WFF)

MS&I Requirements

Technical/Standards

3CE

Build Federation

DIACAP/V&V Pedigree per Federate

ID Candidate Components

LVC M&S/DCA/Inst/Tactical Systems/
Test Control

Build upon each
Event

Events

FCS LUT 3

TFT/TNG/FDT&E/OT

Other Non-FCS applications and events that support Federates & Integration

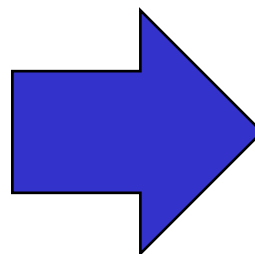


Developing a Core LUT 3 Architecture



Operational Considerations Workshop (8-12 Dec)

- Review Strawman Scenarios
- Force Structure Components (L,V,C)
- Environmental Conditions
- Tactical Network Diagram
- TTPs, Behaviors
- *



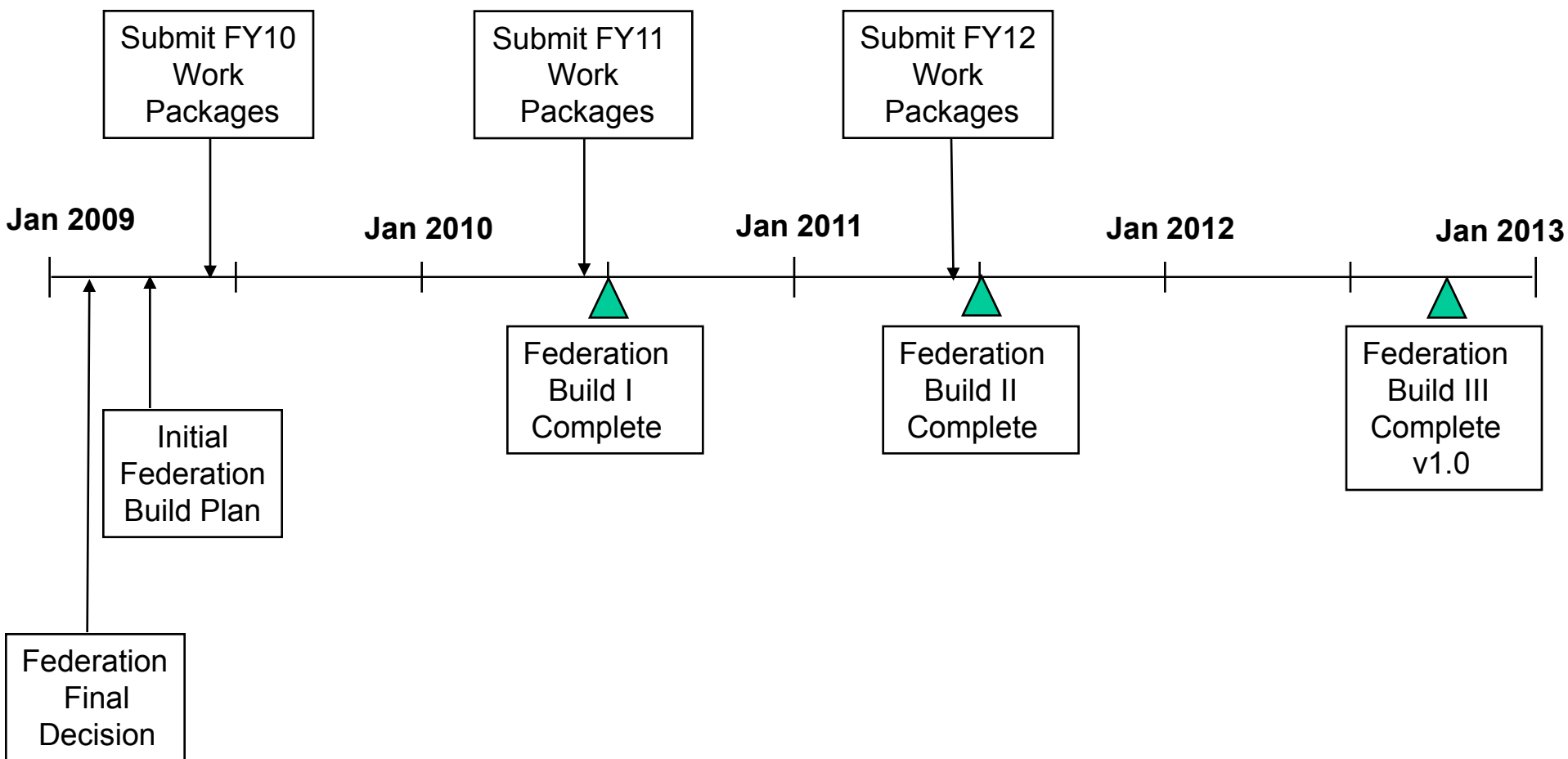
Federation Architectural Design Workshop (15-19 Dec)

- ID Federation Agreement
- Test/Technical Control
- DCA&I Architecture
- Player Support Cells
- Interfaces
- IA Rqmts – DIACAP
- *

These two workshops will enable the initial identification of a solution architecture for Core LUT 3



Long Term Planning Calendar





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Questions

